

# NASA/SPoRT & NWS WFO Coordination Call

Kevin Fuell  
Geoffrey Stano  
Kris White

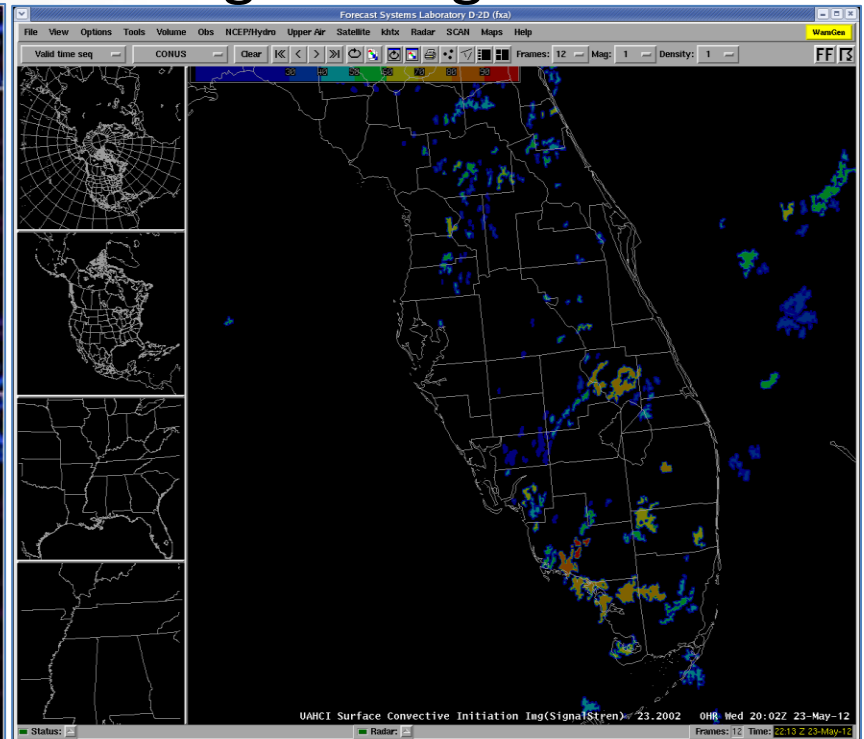
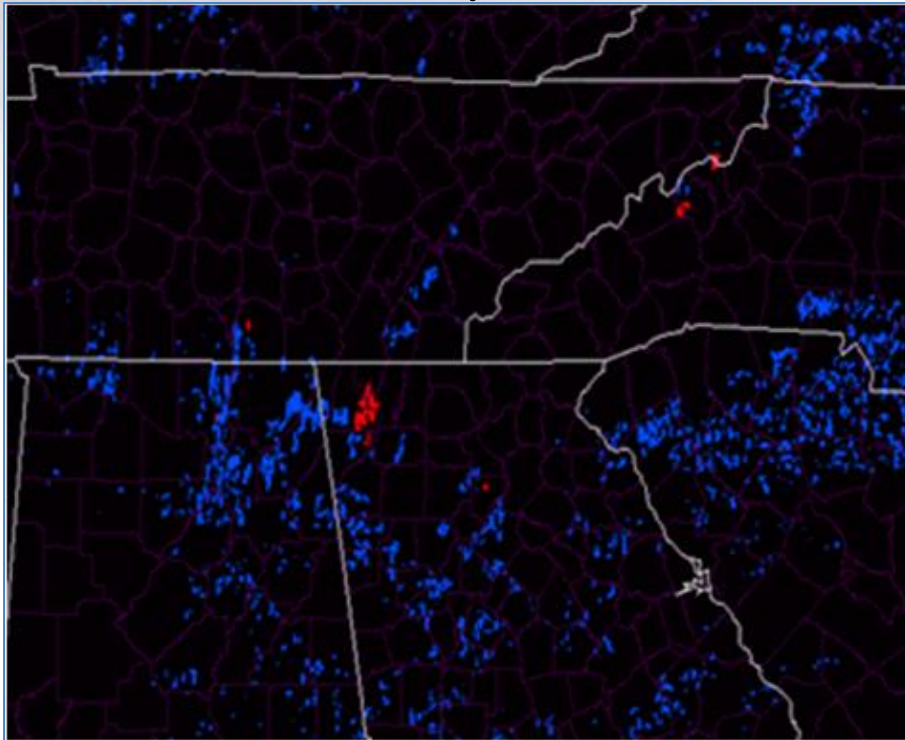
24 May, 2012

# Agenda

- UAH Convective Initiation: Product Change, Training Supplement, Ingest/Display, Evaluation in June/July
- RGB Imagery: usage and evaluation (as events warrant, NWS chat)
- Discussion: Using Total Lightning to anticipate first CG for safety issues (TAF, public events,...)
- Change to SST grid: Impact to WRF-EMS users and display in D2d
- Individual discussions upcoming to review WFO interests and possible subgroups for all.

# UAH Convective Initiation

- Product Change
  - User feedback from previous year has influenced next version of product
  - From Yes/No indicator to a Strength of Signal





# UAH Convective Initiation

- Training Supplement
  - Core of product remains the same (i.e. teletraining from last year still valid), and UAH has provided a PPT to supplement the existing training
- Changes
  - No more thresholds for satellite indicators; instead uses a statistical comparison to a database of CI and non-CI events
  - Algorithm
  - Not truly probabilistic b/c based nearly exclusively on satellite data with no environmental considerations (i.e. shear, cap, etc.)

Firefox - SPoRT Product Training Modules

weather.msfc.nasa.gov/sport/training/

Most Visited Getting Started

access. (May 2012)

**TRAINING**

**Convective Initiation (CI) GOES-R Proxy Algorithm**  
by University of Alabama Huntsville  
[Use the captured GoTo Meeting recording](#) (wmv file; 33.4 MB)  
([user guide](#))

NOTE: The recorded training session is 17 minutes in length. The remaining 21 minutes is a Q&A discussion with the UAH developers.

This is the recording of the second CI tele-training session conducted between SPoRT and the Miami, Melbourne, and Huntsville WFOs. The CI developers discuss the motivation behind a Convective Initiation product as well as how it is created. The existing GOES East channels are used to create 6 "interest fields" over 3 consecutive image scans. These fields are binary indicators of convection. Interpretation of the resulting product and its limitations are discussed. A night-time capability does exist, but is a work in progress. This product has had success at the SPC Spring Experiment and its utility in WFO operations is being tested. (October 2011)

**TRAINING**

**Pseudo Geostationary Lightning Mapper**  
[Download](#) (for NWS users; 14 MB)  
[Launch in browser](#)  
([user guide](#))

This module is an update to the original 2010 training module with new information, graphics, and content.

This module introduces SPoRT's Pseudo Geostationary Lightning Mapper Flash Extent Density product and variants for use in the GOES-R Proving Ground. The Pseudo GLM is intended as a training product for forecasters ahead of the GOES-R era and to prepare forecasters for the more robust GLM Proxy product under development by the Algorithm Working Group. Experts with total lightning and the GLM have contributed to this module that provides brief overviews of total lightning and the actual GLM instrument. Additionally, the Pseudo GLM is described and examples of its use are provided. As this module is intended for preparation for GOES-R Proving Ground activities, particularly the Hazardous Weather Testbed's Spring Program the length is a little longer than most SPoRT modules. This module is 37 minutes long and requires the flash plug-in. (Updated March 2012)

**TRAINING**

**SPoRT Hybrid MODIS-GOES Imagery for the GOES-R Proving Ground**  
[Download](#) (for NWS users; 5.7 MB)  
[Launch in browser](#)  
([user guide](#))

The SPoRT hybrid imagery for the GOES-R Proving Ground is a combination of high-resolution MODIS imagery and standard GOES imagery. Essentially, the MODIS swath replaces the lower resolution GOES imagery whenever it is available while the GOES imagery fills in areas not covered by the swath as well as time periods between MODIS overpasses. Hybrid imagery is available for the visible (500 m) channels as well as longwave IR, shortwave IR, and water vapor (2 km) channels. The benefit is that high-resolution, polar-orbiting data can be viewed in a loop along with the forecasters' standard imagery in order to provide a proxy for the future ABI instrument on GOES-R. (October 2011)

**TRAINING**

**Total Lightning Training: Part 1**  
[Download](#) (for NWS users; 8.3 MB)  
[Launch in browser](#)  
([user guide](#))

This is Part 1 of 2 Lightning Mapping Array training modules. This module introduces the user to total lightning and the source density product provided by NASA SPoRT. While the North Alabama Array is the focus of this module, the concepts can be applied to any total lightning network. Users will learn the difference between total lightning and National Lightning Detection Network (NLDN) data. Also, the concept of a lightning jump will be introduced, which has great use in enhancing the warning decision making process. This module is 16 minutes long and requires the flash plug-in. (March 2009)

**TRAINING**

**CIRA Blended TPW and Anomaly Products**  
[Download](#) (for NWS users)  
[Launch in browser](#)  
([user guide](#))

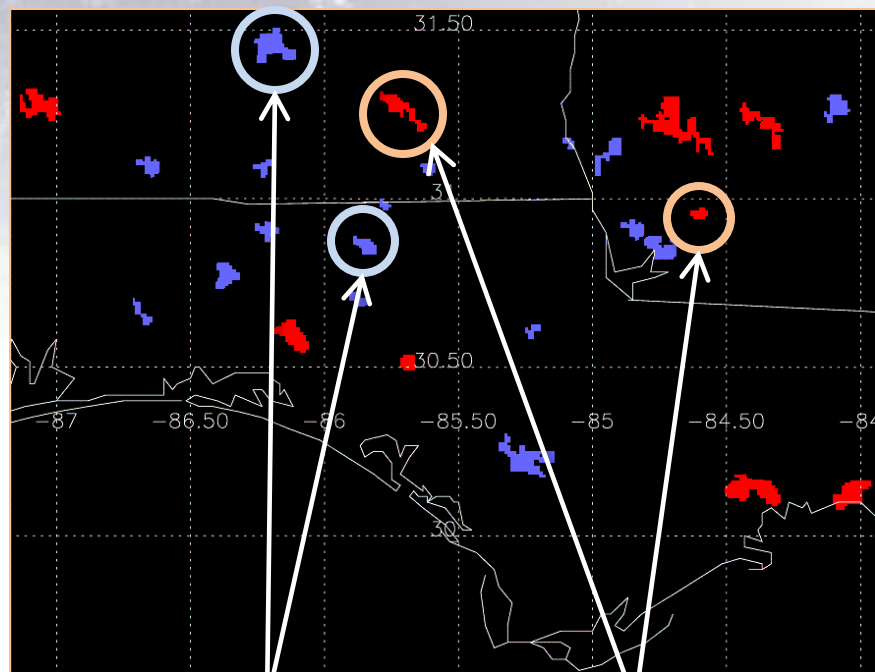
This 30 minute module presents the CIRA Blended

**TRAINING**

**MODIS Fog Product**

# UAHCI Comparison: Old vs New

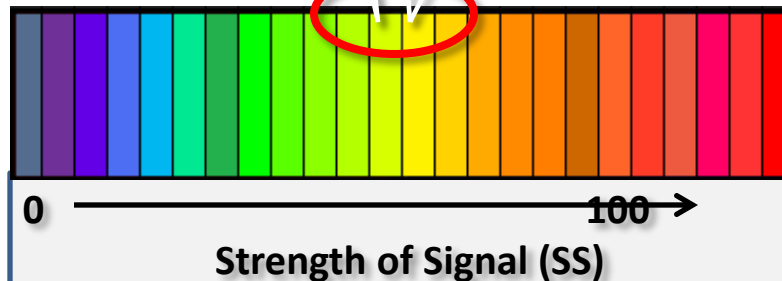
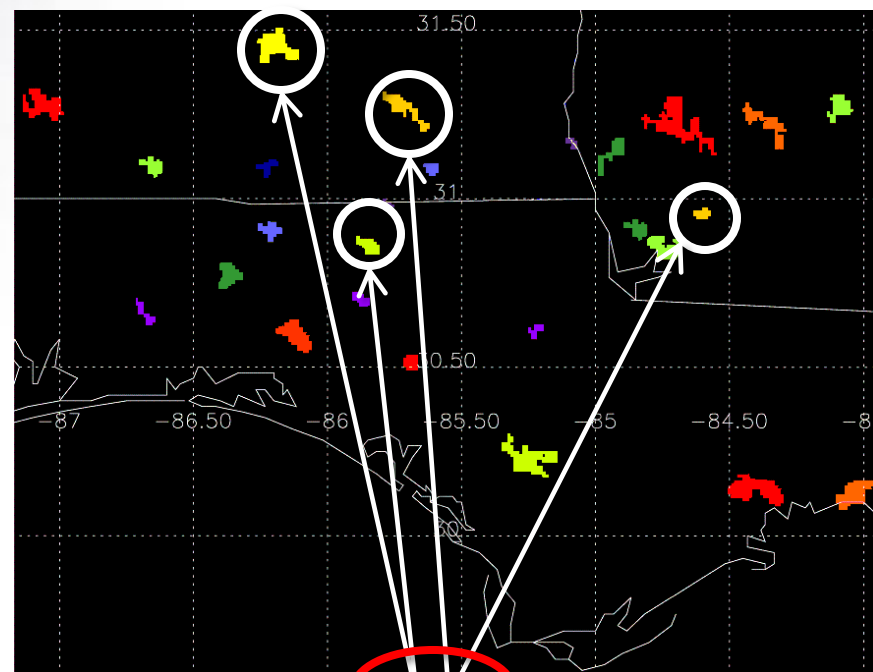
**Previous Version of SATCAST**



Null (No)  
Forecasts

Positive (Yes)  
Forecasts

**Newest Version of SATCAST**



# UAH Convective Initiation

- Ingest/Display
  - Filename is the same so ingest should not change
  - Instructions for AWIPS I display changes to be sent post-call
  - GRIB2 file in use at HWT for AWIPS II display
- Evaluation in June/July
  - Product being evaluated at HWT again (users like the change)
  - HUN, MLB, MFL to evaluation this season. Others to join??? E. Region?
  - User input is going to ultimately determine fate of CI products
  - Would like to discuss evaluation feedback at next call



# RGB Imagery Transition

April 15,  
2012

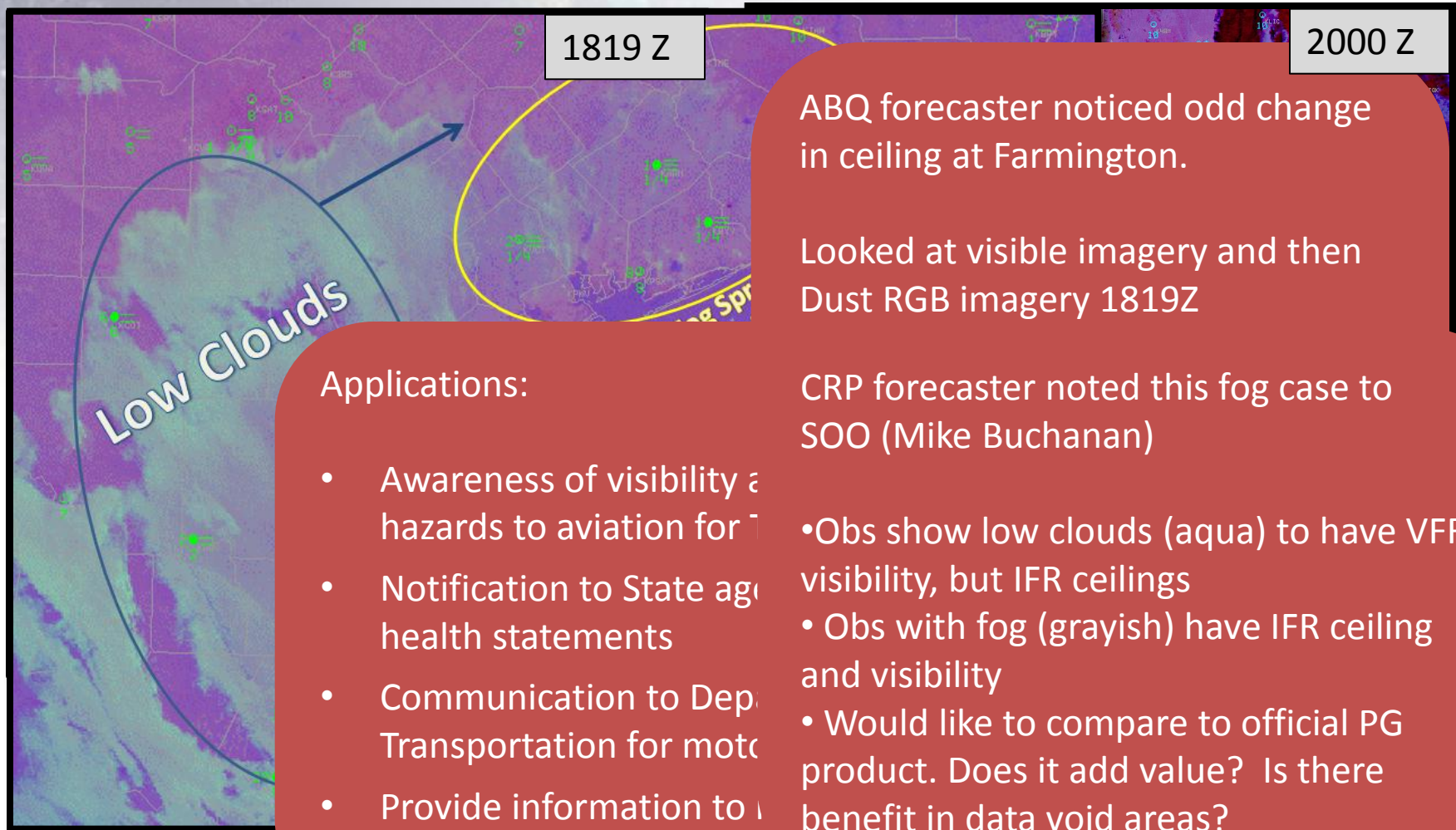
MODIS Visible at 1936Z

MODIS True Color at 1936Z

MODIS Dust at 1936Z

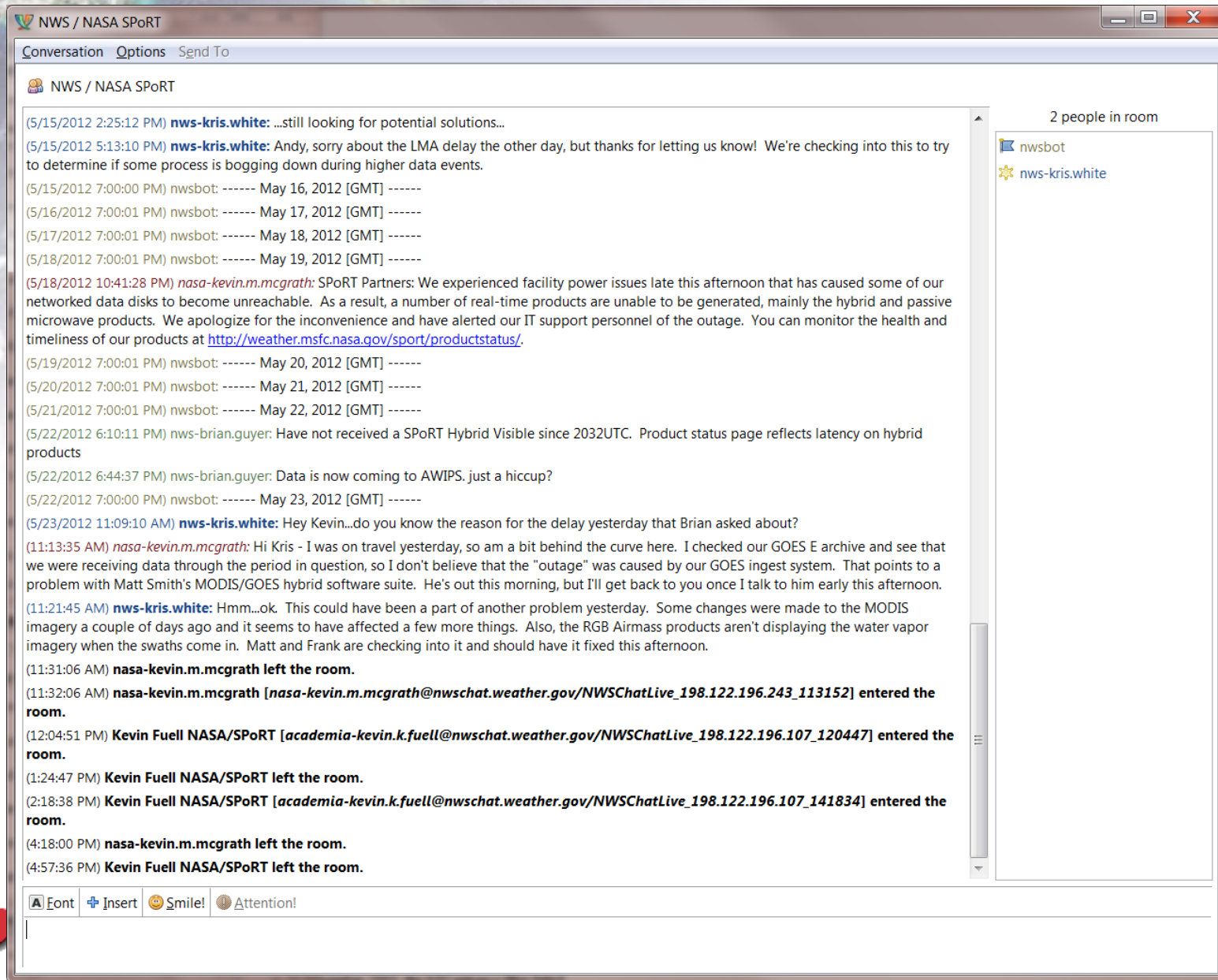
- Dust more evident than on Vis. or True Color imagery
- Dry line is also evident in Dust RGB

# WFO RGB Application Examples





# SPoRT Chat Room: nasa\_sport



NWS / NASA SPoRT

Conversation Options Send To

NWS / NASA SPoRT

2 people in room

nwsbot  
nws-kris.white

(5/15/2012 2:25:12 PM) **nws-kris.white**: ...still looking for potential solutions...

(5/15/2012 5:13:10 PM) **nws-kris.white**: Andy, sorry about the LMA delay the other day, but thanks for letting us know! We're checking into this to try to determine if some process is bogging down during higher data events.

(5/15/2012 7:00:00 PM) nwsbot: ----- May 16, 2012 [GMT] -----

(5/16/2012 7:00:01 PM) nwsbot: ----- May 17, 2012 [GMT] -----

(5/17/2012 7:00:01 PM) nwsbot: ----- May 18, 2012 [GMT] -----

(5/18/2012 7:00:01 PM) nwsbot: ----- May 19, 2012 [GMT] -----

(5/18/2012 10:41:28 PM) **nasa-kevin.m.mcgrath**: SPoRT Partners: We experienced facility power issues late this afternoon that has caused some of our networked data disks to become unreachable. As a result, a number of real-time products are unable to be generated, mainly the hybrid and passive microwave products. We apologize for the inconvenience and have alerted our IT support personnel of the outage. You can monitor the health and timeliness of our products at <http://weather.msfc.nasa.gov/sport/productstatus/>.

(5/19/2012 7:00:01 PM) nwsbot: ----- May 20, 2012 [GMT] -----

(5/20/2012 7:00:01 PM) nwsbot: ----- May 21, 2012 [GMT] -----

(5/21/2012 7:00:01 PM) nwsbot: ----- May 22, 2012 [GMT] -----

(5/22/2012 6:10:11 PM) **nws-brian.guy**: Have not received a SPoRT Hybrid Visible since 2032UTC. Product status page reflects latency on hybrid products

(5/22/2012 6:44:37 PM) **nws-brian.guy**: Data is now coming to AWIPS. just a hiccup?

(5/22/2012 7:00:00 PM) nwsbot: ----- May 23, 2012 [GMT] -----

(5/23/2012 11:09:10 AM) **nws-kris.white**: Hey Kevin...do you know the reason for the delay yesterday that Brian asked about?

(11:13:35 AM) **nasa-kevin.m.mcgrath**: Hi Kris - I was on travel yesterday, so am a bit behind the curve here. I checked our GOES E archive and see that we were receiving data through the period in question, so I don't believe that the "outage" was caused by our GOES ingest system. That points to a problem with Matt Smith's MODIS/GOES hybrid software suite. He's out this morning, but I'll get back to you once I talk to him early this afternoon.

(11:21:45 AM) **nws-kris.white**: Hmm...ok. This could have been a part of another problem yesterday. Some changes were made to the MODIS imagery a couple of days ago and it seems to have affected a few more things. Also, the RGB Airmass products aren't displaying the water vapor imagery when the swaths come in. Matt and Frank are checking into it and should have it fixed this afternoon.

(11:31:06 AM) **nasa-kevin.m.mcgrath** left the room.

(11:32:06 AM) **nasa-kevin.m.mcgrath** [**nasa-kevin.m.mcgrath@nwschat.weather.gov/NWSChatLive\_198.122.196.243\_113152**] entered the room.

(12:04:51 PM) **Kevin Fuell NASA/SPoRT** [**academia-kevin.k.fuell@nwschat.weather.gov/NWSChatLive\_198.122.196.107\_120447**] entered the room.

(1:24:47 PM) **Kevin Fuell NASA/SPoRT** left the room.

(2:18:38 PM) **Kevin Fuell NASA/SPoRT** [**academia-kevin.k.fuell@nwschat.weather.gov/NWSChatLive\_198.122.196.107\_141834**] entered the room.

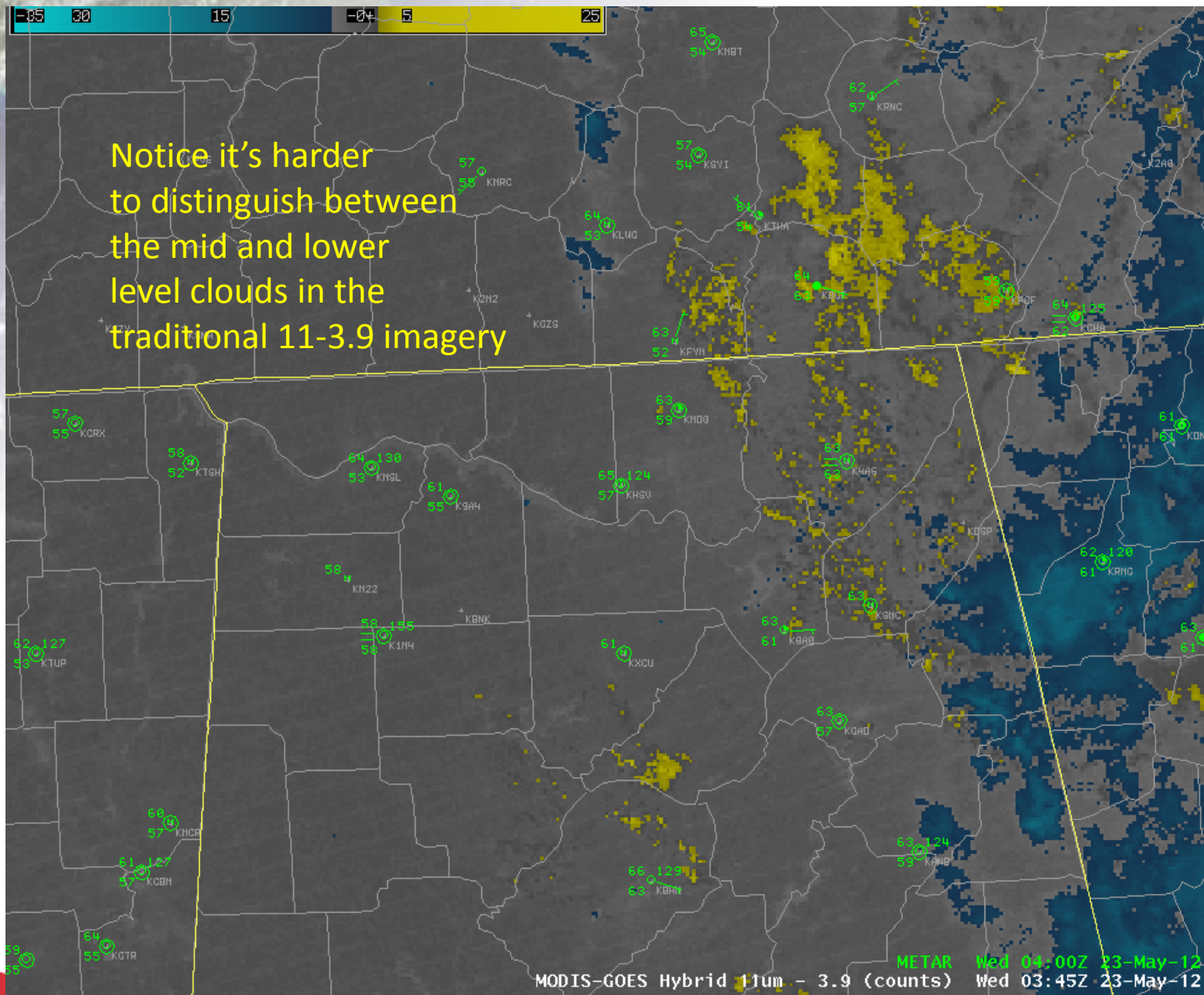
(4:18:00 PM) **nasa-kevin.m.mcgrath** left the room.

(4:57:36 PM) **Kevin Fuell NASA/SPoRT** left the room.

Font Insert Smile! Attention!

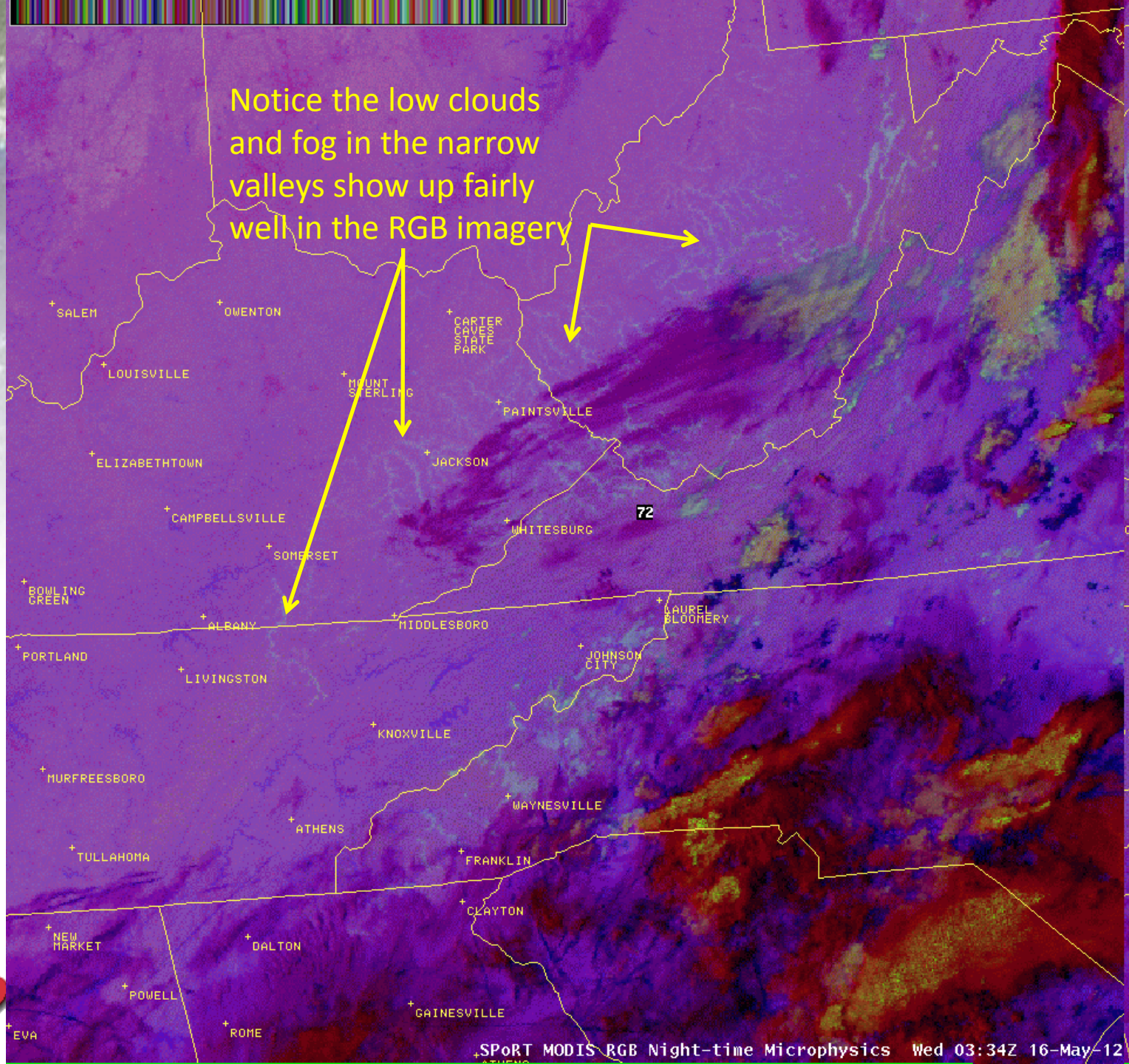






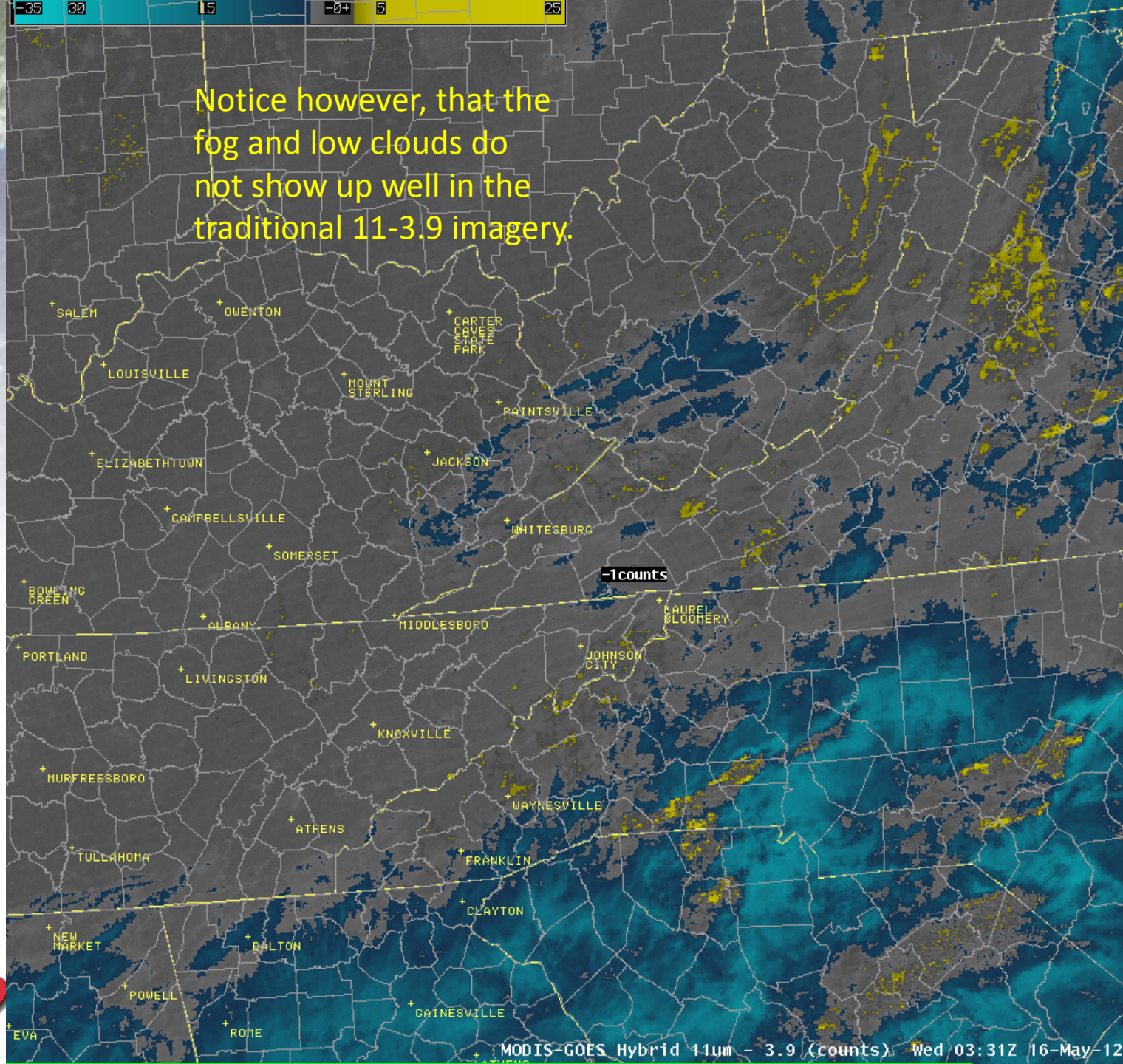


Notice the low clouds  
and fog in the narrow  
valleys show up fairly  
well in the RGB imagery





Notice however, that the fog and low clouds do not show up well in the traditional 11-3.9 imagery.

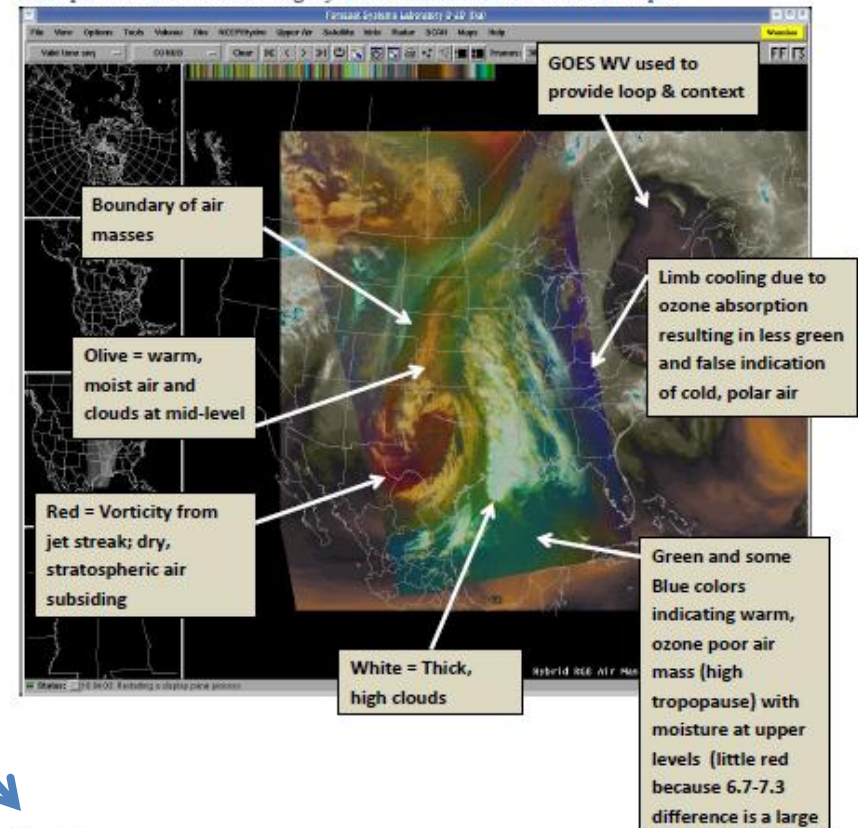


# Training: RGB Quick Guides

- RGB Quick Guides – 2-3 page document
  - Page of text and page with example
  - Why is RGB important?
  - What to specifically look for in the imagery
  - What are the caveats?
- Reference EUMETrain and COMET materials
- EUMETSAT RGB Workshop: September 2012
- Future: Collaborate to capture cases for library of examples

## Page 2 of Air Mass Quick Guide

Example of RGB Air Mass Imagery from MODIS with GOES Water Vapor



### Resources:

This guide provides a highlight of the Air Mass RGB product as quick reference. Operational applications of RGB imagery can be seen on SPoRT's blog site (<http://nasasport.wordpress.com/>). A primer of the RGB imagery concept can be found at the UCAR/COMET MetEd website (<https://www.meted.ucar.edu/>). More in depth information can be found at EUMETRAIN's website (<http://eumetrain.org/>).



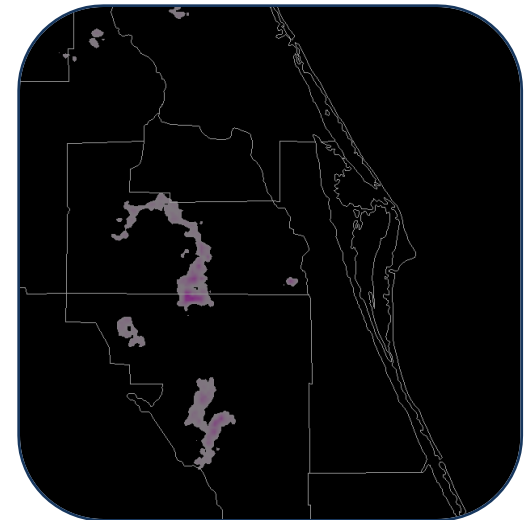
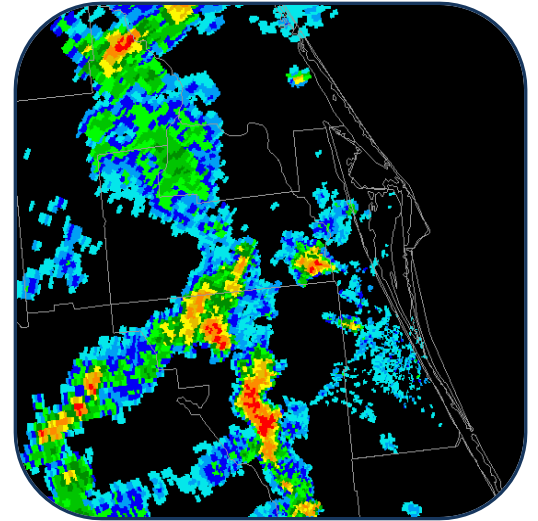
# RGB Imagery Transition

- About 6 SR WFOs have made it available. Would like more participation as VIIRS will provide more opportunities to view RGBs (plugins for AWIPS II will be available)
- Would like to compare RGBs to single channel and derived products to compare value
- Intensive evaluation for a future date
- Presently, NWS Chat room for SPoRT is monitored and can be used to ask questions about RGBs or see messages from SPoRT as events warrant.



# A Lightning Safety Project

- First flash typically intra-cloud
- NLDN will not observe this first flash
- Average lead time ~ 5 minutes
- Cloud-to-ground initiates some storms
- Lead time can exceed 60 minutes
- High IC flash rates tend to delay first CG
  - Related to very strong updrafts
  - Ordinary convection has less lead



# Regional Initial Flash Type Differences

Results from MacGorman et al. (2011), Florida: Data from Stano et al. (2010)  
(Data from NLDN and ground-based lightning mapping arrays)

Based on first cloud-to-ground after first total lightning observation

	Oklahoma	North Texas	High Plains	Central Florida*
% of storms with CG in first minute	20	12	0	14
Time to 50 <sup>th</sup> percentile (min)	6	8	31	4.5
Time to 75 <sup>th</sup> percentile (min)	15	23	44	11
% of storms with CG in 60 min	88	89	80	83

Previous studies found that CGs are a smaller fraction of all lightning on High Plains

\* Central Florida data from unrelated study (Stano et al. 2010)



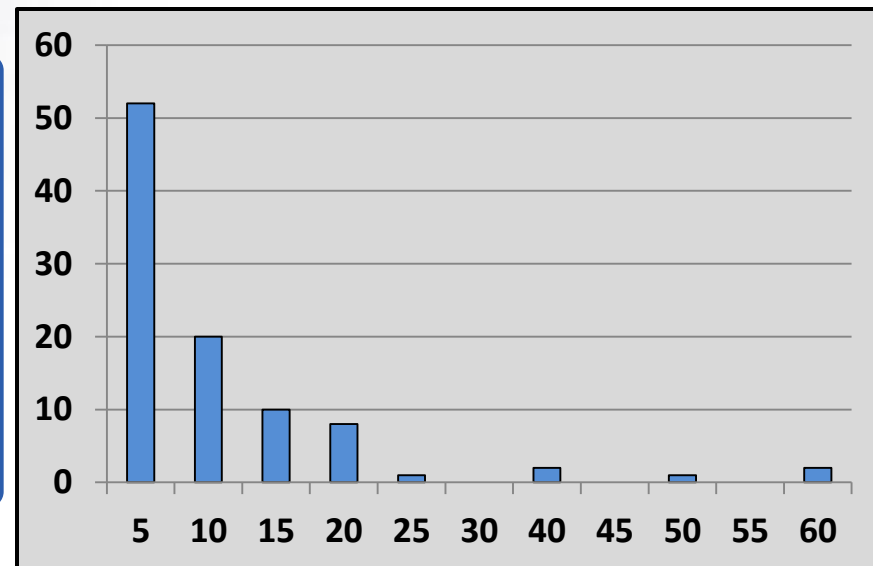
# The Central Florida Example

## “First Strike” Forecasting

- 90% of lightning intra-cloud
- Lead time for initial cloud-to-ground strike
- First IC typically precedes first CG by 5-10 min

First IC to First CG Delay – 116 Storms

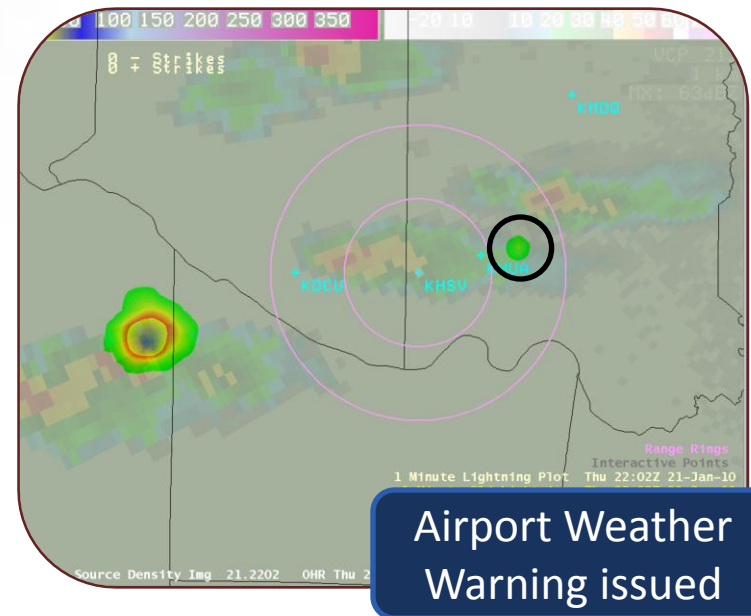
Number of Storms



Time (min)

# Proposed Assessment

- Focus on total lightning lead time over first cloud-to-ground strikes
- Possibly narrow focus
  - TAFs
  - Airport Weather Warnings
- Look at regional differences?
  - North Alabama
  - Kennedy Space Center
  - Houston (when available)
  - Albuquerque (when available)



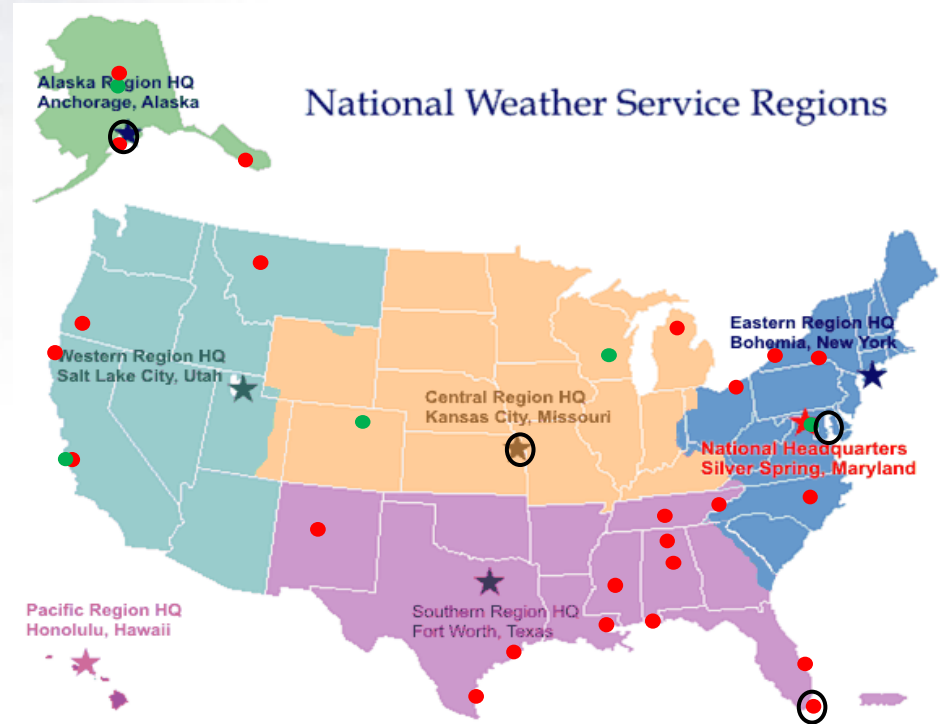
# Continuing the Collaboration

## Earlier recommendations

- Calls every other month
- More subject focused
- Group WFOs by projects

## SPoRT Actions

- Contact partners personally
- Discuss projects important to office
- Help focus AWIPS II efforts
- Follow-up on next call

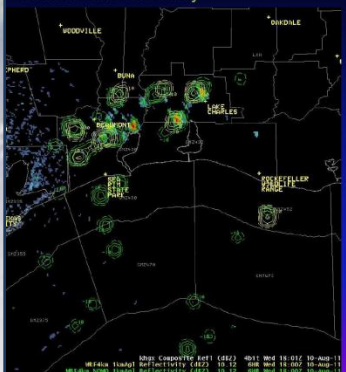




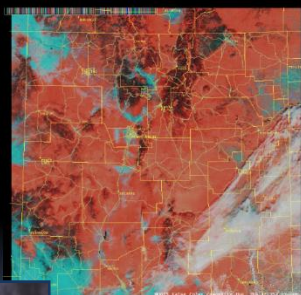
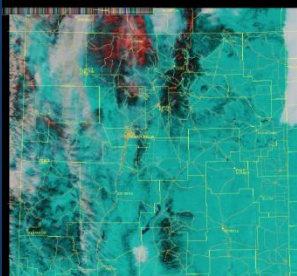
# Announcements

## Some convective examples....

SPoRT WRF reflectivity  
Control WRF reflectivity



## Products Evaluated And Successes: MODIS



3 Feb 2011

with downslope gap winds

## Moderate-resolution Imaging Spectroradiometer (MODIS)



- 250 m resolution
- Channel 1 difference
- Path characteristics are clearly seen
- Damage swaths can be more accurate and detailed.

## 2012 NWA Conference

- Abstracts for posters

## 2012 Virtual Workshop

- 2011 was a success
- Late summer / early fall
- SPoRT developing overall theme

# SST Product Change: June 8

- Product Change:
  - 1 Large domain (Pacific, Atlantic, AK, Great Lakes)
  - 2x/day vs 4x/day
  - 2 km resolution vs 1 km
- Announcement went out several weeks ago via WRF users group for configuration change
  - Will make document of WRF changes available post-call
- SPoRT to also provide new .sup file for localization in AWIPS I

